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SAWYER LAW GROUP LLP PO BOX 51418 PALO ALTO, CA 94303			EXAMINER SHIN, KYUNG H	
			ART UNIT	PAPER NUMBER
			2143	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/706,231	Applicant(s) HARIHARAN ET AL.	
	Examiner Kyung H. Shin	Art Unit 2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 0121 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/12/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responding to application papers filed on **11-12-2003**.
2. Claims **1 - 27** are pending. Claims **1, 10, 19** are independent.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims **1 - 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Jarvis et al.** (US Patent No. **5,870,561**) in view of **Yao et al.** (US PG PUB No. **20030126280**).

Regarding Claims 1, 10, 19, Jarvis discloses a system, computer-readable medium, method for controlling congestion control and avoidance behavior of a plurality of heterogeneous network processors in a network, the network also including at least one host processor utilizing at least one congestion control application, the system comprising:

a plurality of generic application program interfaces (APIs) communicating with the at least one congestion control application, the plurality of generic APIs for communicating with the at least one congestion control application in the at

least one host processor in a processor independent manner, the plurality of generic APIs managing the congestion control and avoidance behavior; (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (utilizing API interface) for remote communications between traffic manager (server, host application, congestion control application) and multiple clients (network processors), flow control avoids congestion; col. 2, lines 60-63: policy (based on congestion), application to control congestion)

Jarvis does not specifically disclose generic network processors controlled by congestion control.

However, Yao discloses:

- a) wherein the plurality of heterogeneous network processors, communicating with the at least one congestion control application in the at least one host processor in a network processor independent manner, and managing the congestion control and avoidance behavior of the plurality of heterogeneous network processors in a network processor specific manner. (see Yao paragraph [0002], lines 1-4; paragraph [0004], lines 1-5: data flow (congestion) control procedure; paragraph [0015], lines 4-8: congestion control, specific to network processor (control congestion via data flow through port); paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: generic (no specific type or model of network processor required, multiple input and output ports)

Art Unit: 2143

Jarvis discloses wherein the plurality of generic APIs allow the at least one congestion control application to manage the congestion control and avoidance behavior. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (utilizing API interface) for remote communications between traffic manager (server, host application, congestion control application) and multiple clients (network processors), flow control avoids congestion; col. 2, lines 60-63: policy (based on congestion), application to control congestion)

Jarvis does not specifically disclose whereby generic network processors are controlled by congestion control.

However, Yao discloses:

- b) wherein the at least one congestion control to be network processor independent and to manage the congestion control and avoidance behavior of the plurality of heterogeneous network processors in the network processor specific manner. (see Yao paragraph [0005], lines 1-4: congestion control mechanism not specific to a particular type network processor, XON/XOFF data flow control; paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: generic (no specific type or model of network processor required, multiple input and output ports; paragraph [0015], lines 4-8: congestion controlled via a port, network processor specific manner)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control. One of ordinary skill

in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7: “ ... However, these standard protocols do not eliminate head of line (HOL) blocking within a switch. HOL blocking is a problem for internal switching that occurs when several packets at the head of an input queue block packets from being forwarded to output ports. ... ”; paragraph [0008], lines 1-7: “ ... An advantage of the present flow control schemes is that HOL blocking is substantially eliminated. The present flow control schemes alleviate the problems of increased system latency, unintentionally dropped packets, and time-out situations. Another advantage of the present flow control schemes is that more efficient data streaming is provided for the computer network. ... ”)

Regarding Claims 2, 11, 20, Jarvis discloses the system, computer-readable medium, method of claims 1, 10, 19 wherein the plurality of generic APIs are used by the at least one congestion control application wherein the congestion control and avoidance behavior is to be managed. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (utilizing API interface) for communications between traffic manager (congestion control application) and clients (network processors), data flow control avoids congestion; col. 2, lines 60-63: policy (based on congestion), application to control congestion) Jarvis does not specifically disclose whereby determining at least one location in each of the plurality of heterogeneous network processors the

congestion control and avoidance behavior is to be managed. However, Yao discloses wherein to determine at least one location in each of the plurality of heterogeneous network processors the congestion control and avoidance behavior is to be managed. (see Yao paragraph [0004], lines 1-5: congestion control (control data flow); paragraph [0015], lines 4-8: port, congestion control location for avoidance behavior, temporarily turn on/off data traffic to port; paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: generic, no specific type or model of network processor required (digital processor, capable of computational calculations, heterogeneous types of network processors can be utilized))

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 3, 12, 21, Jarvis discloses the system, computer-readable medium, method of claims 2, 11, 20. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion) Jarvis does not specifically

disclose whereby the at least one location further includes an ingress portion and/or an egress portion. However, Yao discloses wherein the at least one location further includes an ingress portion and/or an egress portion of each of the plurality of heterogeneous network processors. (see Yao paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: multiple network processors; paragraph [0004], lines 1-5: congestion control (control data flow); paragraph [0015], lines 4-8: port, congestion control location for avoidance behavior, turn on/off data flow traffic)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control with an input and output portion. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 4, 13, 22, Jarvis discloses the system, computer-readable medium, method of claims 2, 11, 20. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion) Jarvis does not specifically disclose whereby the ingress portion further includes a plurality of ports, a plurality of receive queues, and a plurality of received flows. However, Yao discloses wherein the

ingress portion further includes a plurality of ports, a plurality of receive queues, and a plurality of received flows. (see Yao paragraph [0015], lines 11-15: multiple input ports; paragraph [0016], lines 1-3: queues for input data; paragraph [0016], lines 5-8: an input (ingress) data flow)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control with an input and output portion. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 5, 14, 23, Jarvis discloses the system, computer-readable medium, method of claims 4, 13, 22. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion) Jarvis does not specifically disclose whereby the egress portion further includes a plurality of scheduler flows, a plurality of scheduler queues, a plurality of transmit queues, and the plurality of ports. However, Yao discloses wherein the egress portion further includes a plurality of scheduler flows, a plurality of scheduler queues, a plurality of transmit queues, and the plurality of ports. (see Yao paragraph [0016], lines 8-9: scheduler controlled output flows

Art Unit: 2143

(queues); paragraph [0015], lines 1-4; paragraph [0016], lines 4-5: multiple ports, multiple output flows (queues); paragraph [0020], lines 3-5: multiple output ports, (one output queue for each output port))

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control with an input and output portion. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 6, 15, 24, Jarvis discloses the system, computer-readable medium, method of claims 2, 11, 22 wherein the plurality of generic APIs are used by the at least one congestion control application to determine how the congestion control and avoidance behavior is to be managed. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion) Jarvis does not specifically disclose whereby how the congestion control and avoidance behavior is to be managed at the at least one location. However, Yao discloses wherein to determine how the congestion control and avoidance behavior is to be managed at the at least one location in each of the plurality of heterogeneous network processors. (see

Art Unit: 2143

Yao paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: generic network processors; paragraph [0004], lines 1-5: congestion control (control data flow); paragraph [0015], lines 4-8: port, congestion control location for avoidance behavior, turn on/off data flow traffic)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 7, 16, 25, Jarvis discloses the system, computer-readable medium, method of claims 6, 15, 19 wherein the plurality of generic APIs determine at least one congestion control algorithm to be applied upon congestion. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion; col. 5, lines 28-36: formulas (algorithms) for congestion control) Jarvis does not specifically disclose whereby at least one congestion control to be applied upon congestion at each of the at least one location. However, Yao discloses wherein to determine at least one congestion control to be applied upon congestion at each of

the at least one location in each of the plurality of heterogeneous network processors. (see Yao paragraph [0004], lines 1-5: congestion control (control data flow); paragraph [0015], lines 4-8: port, congestion control location for avoidance behavior, congestion control algorithm, data flow on; data flow off based on security policies)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and data flow on and off procedures for a congestion control algorithm. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 8, 17, 26, Jarvis discloses the system, computer-readable medium, method of claims 1, 10, 19 wherein the plurality of generic APIs further return a null behavior in which a particular function of a particular API is not supported. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion; col. 4, lines 57-61: disable policy (no action performed for a certain function (temporarily while disabled)) Jarvis does not specifically disclose whereby a plurality of heterogeneous network processors. However, Yao discloses wherein the plurality of heterogeneous network processors. (see Yao paragraph [0002],

lines 1-4; paragraph [0004], lines 1-5: data flow (congestion) control procedure; paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: generic (no specific type or model, heterogeneous) network processor required, multiple input and output ports)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for network processors as software API clients and network device port as the location for congestion control with an input and output portion. One of ordinary skill in the art would have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Regarding Claims 9, 18, 27, Jarvis discloses the system, computer-readable medium, method of claims 1, 10, 19. (see Jarvis col. 2, lines 51-56; col. 5, lines 1-5; col. 5, lines 1-5; col. 5, lines 45-47: software (API) for communications between traffic manager (congestion control application) and clients (network processors), controlling data flow avoids congestion; col. 2, lines 60-63: application to control congestion) wherein the plurality of generic APIs include a configure API, an update API, an enable API, a disable API, and a list API, the configure API allowing the at least one congestion control application to configure the congestion control and avoidance behavior of each of the plurality of heterogeneous network processors (see Jarvis col. 5, lines 63-66: set programmable threshold limits for congestion control (configure)), the update API

allowing the at least one congestion control application to update the congestion control and avoidance behavior of each of the plurality of heterogeneous network processors (see Jarvis col. 5, lines 63-66: change (update) congestion control information (policies)), the enable API allowing the at least one congestion control application to enable the congestion control and avoidance behavior of each of the plurality of heterogeneous network processors, the disable API allowing the at least one congestion control application to disable the congestion control and avoidance behavior of each of the plurality of heterogeneous network processors (see Jarvis col. 4, lines 57-61: disable policy (congestion control capability)), and the list API allowing the at least one congestion control application to obtain a list of the congestion control and avoidance behavior of each of the plurality of heterogeneous network processors. (see Jarvis col. 4, lines 65-67: view (list) congestion control policies)) Jarvis does not specifically disclose whereby a plurality of heterogeneous network processors.

However, Yao discloses wherein the plurality of heterogeneous network processors. (see Yao paragraph [0002], lines 1-4; paragraph [0004], lines 1-5: data flow (congestion) control procedure; paragraph [0015], lines 4-8: congestion control, specific to network processor (control congestion via data flow through port); paragraph [0018], lines 1-3; paragraph [0020], lines 1-3; paragraph [0020], lines 6-9: generic (no specific type or model of network processor required, multiple input and output ports)

It would have been obvious to one of ordinary skill in the art to modify Jarvis as taught by Yao to enable the capability for multiple network processors of no specific type as software API clients for network device(s). One of ordinary skill in the art would

have been motivated to employ the teachings of Yao in order to enable the capability for control congestion and to eliminate the specific congestion control problem designated HOL in network switches. (see Yao paragraph [0003], lines 2-7; paragraph [0008], lines 1-7)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyung H. Shin whose telephone number is (571) 272-3920. The examiner can normally be reached on 9:30 am - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2143

Kyung Hye Shin

KHS

October 10, 2007

Kyung Hye Shin

Patent Examiner

Art Unit 2143